Appendix A

National Type Evaluation Technical Committee (NTETC)
Grain Analyzer Sector

August 24 - 25, 2005 – Kansas City, Missouri
Meeting Summary

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1. Report on GIPSA/NIST Interagency Agreement – Fee Increase

The Grain Inspection Packers and Stockyards Administration (GIPSA) and the National Institute of Standards and Technology (NIST) signed an updated Interagency Agreement in March 2005 that provides funding for the Grain Moisture Meter On-going Calibration Program (OCP) for fiscal years 2005 through 2009. Under the terms of the updated agreement NIST and GIPSA each will contribute one-third the cost of the program subject to an annual maximum of $26,500 each. The balance of costs is borne by manufacturers and depends on the number of meter models in the NTEP "pool" according to the fee schedule shown below. Implementation of this fee schedule became effective at the start of FY2005 (October 1, 2004). The fee schedule shown below was developed about two years ago using a modest estimate of likely increases in GIPSA's costs. Dr. Richard Pierce, GIPSA, reported that GIPSA's hourly rate for NTEP evaluations has risen to $83.20 and the fee for air oven moisture determinations has increased to $13.00 each. In spite of these increases, the OCP Fee Schedule is expected to remain as shown below through FY 2009.

NTEP On-going Calibration Program Fee Schedule for Fiscal Years 2005 - 2009							
(1) Total Meters (including official meter)	(2) Meters in NTEP Pool	(3) Cost per NTEP Pool Meter	(4) Total Program Cost	Funding Contribution from Participants			
				(5) NIST	(6) GIPSA	(7) Manufacturers (total funding from mfg's)	(8) Cost per Meter Type
2	1	$19,875	$19,875	$6,625	$6,625	$6,625	$3,315
3	2	19,875	39,750	13,250	13,250	13,250	4,415
4	3	19,875	59,625	19,875	19,875	19,875	4,970
5	4	19,875	79,500	26,500	26,500	26,500	5,300
6	5	19,875	99,375	26,500	26,500	46,375	7,730
7	6	19,875	119,250	26,500	26,500	66,250	9,465
8	7	19,875	139,125	26,500	26,500	86,125	10,765
9	8	19,875	159,000	26,500	26,500	106,000	11,775

2. Report on the 2005 NCWM Interim and Annual Meetings

The Interim Meeting of the 90th National Conference on Weights and Measures (NCWM) was held January 23 - 26, 2005, in Santa Monica, California. At that meeting, the NTEP Board of Directors accepted the Sector's recommendation to merge the Grain Moisture Meter Sector and the Near-Infrared Grain Analyzer Sector into a new Sector to be called the Grain Analyzer Sector. The NTEP Committee accepted the Sector's recommended amendments and changes to the 2004 Edition of the Grain Moisture Meter chapter of Publication 14. These changes appear in the 2005 Edition of NCWM Publication 14. For additional background refer to *Committee Reports for the 90th Annual Meeting,* NCWM Publication 16, April 2005.

Amendments and Changes to the 2004 Edition of the Grain Moisture Meter Chapter of Publication 14		
Section Number	**Amendment/Change**	**Page**
Section IV. Tolerances for Calibration Performance	Add item c. to establish an overall calibration bias requirement based on up to three years of available data. Change wording in paragraph preceding item a. and in paragraph following item c. to reflect addition of item c.	GMM-5 through GMM-6
Section VII.B. Accuracy, Precision, and Reproducibility	Change the Minimum Test Weight per Bushel Ranges in the Table in §VII.B. to facilitate selection of test-set samples.	GMM-11
Section VII.B. Accuracy, Precision, and Reproducibility	Change tolerances for repeatability (precision) for Corn and Oats to more realistic value.	GMM-13

The 90th Annual Meeting of the NCWM was held July 10 - 14, 2005, in Orlando, Florida. No Grain Moisture Meter (GMM) or Near-Infrared (NIR) Grain Analyzer items appeared in the Specifications and Tolerances (S&T) Committee Interim Report for consideration by the NCWM at the 2005 Annual Meeting.

Steve Patoray, NTEP Director, expressed concern about declining attendance at the NCWM Interim and Annual Meetings. He encouraged Sector members to attend future meetings. At least one state weights and measures representative related that a lack of state funds (and withdrawal of NCWM travel support) had severely limited out-of-state travel to meetings.

Steve reported that an electronic version of NCWM Publication 14 is now available in Adobe Acrobat PDF format on compact disk (CD). Single CDs are priced at $135 plus postage and handling. Because of copyright issues, the PDF file is locked so it is not possible to print a hard copy of the document. It is possible, however, to add comments and highlight text. All four sections of Publication 14 are included on the CD. Order forms can be found on the updated NCWM website, http://www.ncwm.net/. Search capabilities for NTEP certificates have been greatly improved on the updated site. Steve cautioned that users must delete existing "bookmarks" to the old certificate data base search page.

The new certificate database cannot be reached using the old "bookmarks." The new database can be accessed easily from the new home page.

Steve briefed the Sector on the Verification Conformity Assessment Program (VCAP) under development for weighing devices or components of weighing devices. Initial verification will not repeat NTEP testing, but will involve field checking of model numbers and markings and will include some general testing to verify that the devices meet type. Additionally, there will be a third-party assessment of the manufacturer's quality system. The manufacturer must have a sampling plan and documented evidence to show that it is being used. The manufacturer must also comply with a sub-set of ISO/IEC 17025, ***General requirements for the competence of testing and calibration laboratories***, demonstrating that all the factors that may contribute to errors in the calibration process have been taken into account.

3. Report on NTEP Type Evaluations and OCP (Phase II) Testing

Cathy Brenner, GIPSA, the NTEP Participating Laboratory for Grain Analyzers, reported on NTEP Type Evaluation activity. In addition to regular grain moisture meter calibration updates, evaluations are currently underway for three additional devices: one for test weight per bushel (an add-on to a currently approved grain moisture meter); one new grain moisture meter with test weight capability; and one new NIR grain analyzer for miscellaneous constituents including moisture. Cathy also reported that the following devices would be enrolled in the OCP (Phase II) for the 2005 harvest:

[Note: Models listed on a single line are considered to be of the same "type."]

DICKEY-john Corporation	GAC2000, GAC2100, GAC2100a, GAC2100b
Foss North America	Infratec 1241
Foss North America	Infratec 1227, Infratec 1229
Seedburo Equipment Company	1200A
The Steinlite Corporation	SL95

4. Proposed Change to NCWM Publication 14 - Bias Tolerances for Test Weight per Bushel

Background: The Grain Moisture Meter (GMM) Chapter of Publication 14 calls for testing the automatic test weight per bushel (TW) measuring feature of GMMs for accuracy, repeatability (precision), and reproducibility using 12 selected samples of each grain type (for which the meter has a pending or higher moisture calibration). The two tests for accuracy are bias (meter versus the standard reference method) and the Standard Deviation of the Differences (SDD) between the meter and the standard reference method. Publication 14 states that, "The manufacturer may adjust the calibration bias to compensate for differences from the type evaluation laboratory in reference methods or sample sets."

Recent NTEP tests revealed that the results of the bias test, which uses only 12 selected samples, are sample set dependent. The following table illustrates this dependence. No changes were made to the meters between the tests using Sample Set 1 and Sample Set 2. The table also shows how those same meters compare against the most recent three crop years of Phase II test weight (TW) data.

		Test Weight per Bushel Bias				
Grain Type	**GMM Model**	**Based on Phase II TW Data (3 crop-years)**	**Sample Set 1**		**Sample Set 2**	
			Meter "A"	**Meter "B"**	**Meter "A"**	**Meter "B"**
Corn	1	–0.20	–0.02	+0.01	–0.36	–0.24
	2	+0.09	+0.79	+0.13	+0.82	+0.32
Oats	1	–0.27	–0.06	+0.04	–0.29	–0.24
	2	–0.14	–0.04	+0.03	–0.14	–0.16
Six-Row Barley	1	–0.21	–0.01	–0.05	–0.01	–0.02
Sunflower	1	–0.10	–0.02	–0.09	+0.10	+0.13

Because of the above-observed differences, the NTEP Lab did not list specific bias terms on the Certificate of Conformance (CC) for instruments recently evaluated for TW. Instead, the CC simply indicates that the meter is approved for Test Weight per Bushel measurements.

Discussion: The NTEP Lab proposed eliminating the bias tolerance requirement for test weight per bushel from the accuracy tests of the GMM Chapter of Publication 14. The test would still be conducted, and TW bias results would be provided to the manufacturer as is currently done with NIR grain analyzer protein and oil bias results.

Dr. Charles Hurburgh, Iowa State University, pointed out that, based on data taken on only 12 samples, the bias differences between Sample Set "1" and Sample Set "2" did not appear to be statistically significant and asked if this might be a reproducibility issue. For these tests, Publication 14 specifies that samples will be dropped three times through each of two meters. He asked if more than three drops might be needed. He noted also that for corn there was an unusually large difference in biases between Meters "A" and "B" of Model 2 for both sets of samples. He suggested that the Sector consider adding a requirement to Publication 14 to specify that the difference in bias between the two instruments submitted for evaluation must not exceed the individual instrument tolerances for bias.

Dr. Richard Pierce, GIPSA, explained that there is a difference between the sample sets used for Phase I moisture evaluations and Phase I Test Weight per Bushel (TW) evaluations. Sample sets for moisture evaluations are carefully pre-screened. As a result, they have produced very similar results from year to year, although the individual grain samples that comprise a set vary from year to year. Conversely, the process for selecting samples for TW evaluations is somewhat random (except for moisture distribution criteria and the requirement that samples represent a distribution of TW that minimizes the correlation between TW and moisture). There is no reason to expect two different sets of TW samples to agree and there is no way to determine if one set is better than another. Consequently, bias data obtained using a TW sample set is not suitable for determining what adjustment should be applied to minimize bias error on a large population of samples.

One Sector member asked if there might be a better way to pre-select TW samples to obtain a more reproducible sample set. Dr. Pierce replied that pre-screening is very difficult. Adding additional criteria to the selection of TW samples will make sample selection even more difficult. The fact that in many years very low TW samples are not available further contributes to this difficulty.

Sean Bauer, Steinlite Corporation, mentioning that TW can change with time, asked if there was a significant time interval between determination of TW by the standard kettle method and the measurement of TW on the meters. Cathy Brenner, GIPSA, stated that these tests were conducted on either the same day or the next day. She added that operator uniformity had been verified and that data obtained by check test operators had been compared with data taken on the same samples for Phase II tests. It was determined that the procedures used did not contribute to the observed differences between the two TW test sets.

Jack Barber, Co-Technical Advisor to the Sector, expressed concern about not listing grain-dependent bias adjustment coefficients on the CC. He pointed out that NIST Handbook 44, Section 5.56.(a) Grain Moisture Meters Code, stipulates:

> **S.2.4.3. Calibration Transfer** - *The instrument hardware/software design and calibration procedures shall permit calibration development and the transfer of calibrations between instruments of like models without requiring user slope or bias adjustments.*

This requirement applies to both moisture and TW calibrations. [*Editor's note:* For further background on the Sector's original intent regarding calibration transfer between grain moisture meters of like type, see Agenda Item 9 in the Grain Moisture Meter Sector March 1997 Meeting Summary.] In devices where grain-dependent TW calibration coefficients (including bias adjustment coefficients) are imbedded in the CC listing of grain moisture calibration coefficients, there is no problem. Any change in coefficients affecting TW will require a change in the moisture calibration and an amendment to the CC. The concern is with devices that do not treat a grain-dependent TW bias adjustment coefficient as part of the moisture calibration. In that case, unless grain-dependent bias adjustment coefficients are listed on the CC, there is no way for field inspectors to know if the most recent adjustment coefficients are being used for test weight. The Sector agreed that if the bias adjustment term is not part of the moisture calibration coefficients then it must be listed on the certificate.

The Sector was in general agreement that TW data from the On-going Calibration Program (OCP), (Phase II), was the best measure of how closely a meter is biased to the standard quart kettle method. In response to a question of whether Phase II TW data for corn for the entire moisture range should be used or only data for a restricted (and lower) moisture range, Dr. Pierce replied that TW data above 20 % moisture would not be used.

The proposed use of Phase II TW data raised several questions:

1. What grain-dependent bias correction coefficient should be specified before the meter has been in the OCP for at least one year?
2. Should a TW calibration that has not been verified in the OCP be classified as "pending?"
3. Should the most recent three years of available data be used to determine if a bias adjustment is necessary? If so, what tolerance should be applied?

In the ensuing discussion, the Sector agreed that the manufacturer should specify the grain-dependent bias correction coefficients to be used initially, provided the devices could pass Phase I tests using those coefficients. Although no vote was taken, there wasn't enthusiastic support for classifying the initial TW calibration as "pending," and no one suggested what tolerance should be applied after the device had been in the OCP for a year or more.

Conclusion: The Co-Technical Advisor was requested to develop suggested wording for changes to Publication 14 to reflect the following:

1. The Bias test for TW Accuracy will be retained.
2. Data from the Phase II On-going Calibration Review Program may be used at the manufacturer's discretion to support a grain-specific TW bias-adjustment change in a TW calibration.
3. A new Phase I evaluation is NOT required for a grain-specific TW bias-adjustment change in a TW calibration supported by Phase II data.
4. Any change in a grain-specific TW calibration (including changes in grain-specific bias adjustments) must be reflected on the CC in a manner obvious to field inspectors.
5. The Bias results for TW accuracy for each of the two instruments of like-type submitted for evaluation must agree with each other by the same tolerance that they must agree with the reference method.

If possible, the proposed changes will be submitted to the Sector by letter ballot for approval in time to forward the item to the NTEP Committee for consideration at the NCWM Interim Meeting in January 2006.

5. Comparative NTEP On-going Calibration Program (OCP) Performance Data

Source: Seedburo Equipment Company

Background: At the Sector's August 2004 meeting Dr. Richard Pierce, GIPSA (the NTEP Laboratory), presented graphical data showing the comparative performance of all NTEP meter types vs. the air oven. These data were based on the last three crop years (2001 - 2003) using calibrations updated for use during the 2004 harvest season. Because of the proprietary nature of OCP data, individual meters (including the Official Meter) were not identified by model or by manufacturer. There were lengthy discussions on these results, speculation about which instruments were which, and questions of whether calibration verification analysis was actually being conducted by some manufacturers. Some comments suggested that a meter manufacturer might not be aware of their relative position based on these comparisons. Examination of the comparative performance data led the Sector to recommend changes to the GMM Chapter of Publication 14 to set a limit on average calibration bias (with respect to air oven) to improve alignment between meter types.

Recommendation: To assist manufacturers in improving NTEP grain calibrations and to achieve better uniformity between meter types, the sector should annually review comparative OCP performance data identifying the USDA-GIPSA Official Meter and containing average bias data for each meter type on each grain.

Discussion: Some meter manufacturers have since expressed concern that the Official Meter was not identified in the presentation of comparative performance data. Even though the air oven is the standard reference against which NTEP meter performance is measured in the OCP, the Official Meter is the de-facto standard for the grain trade. Other manufacturers want to know how their meters compare with the Official Meter.

Regular review of comparative OCP performance data by the Sector has definite advantages:

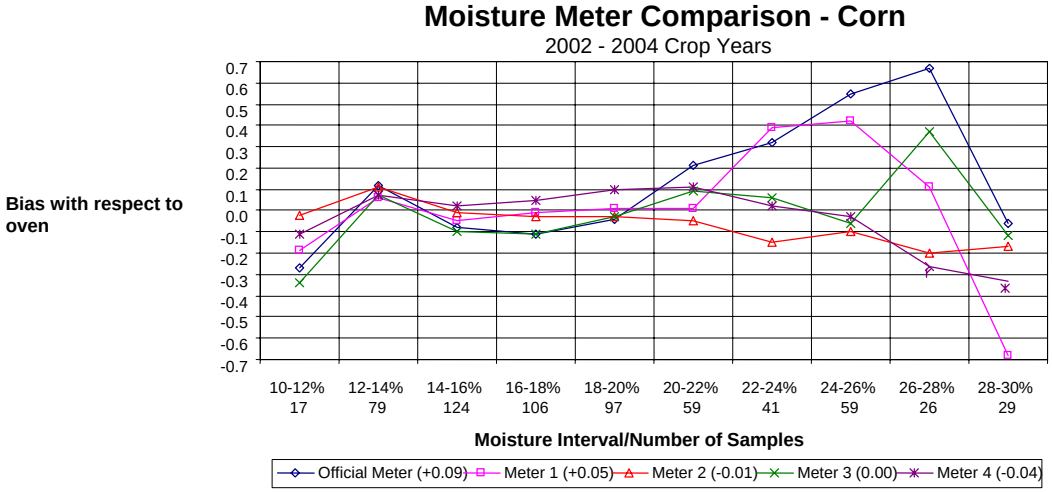
- Calibration performance problems not addressed by existing requirements are exposed.
- Manufacturers can see how their instruments compare with others.

To be of greatest value to manufacturers, the comparative OCP performance data must identify the Official Meter and list the average bias for each meter type on each grain. Accuracy of the Official Meter (average differences between the GAC 2100 and Air Oven as percent moisture) based on the U.S. nationwide sample set, 3 years' data, and most recent review, is already being published annually by USDA GIPSA/FGIS in Directive 9180.61. This is the OCP performance data for the Official Meter, so there should be no proprietary/confidentiality issues regarding identifying the Official Meter in the presentation of comparative OCP performance data.

Conclusion: The Sector agreed that the proposed comparative performance data should be available for annual review by the Sector. In the event that the Sector does not hold a formal meeting in any year, the data for that period can be distributed by e-mail for review. Note: The OCP data presented in Agenda Item 6 for 2002 - 2004 does specifically identify the official meter.

6. Review of On-going Calibration Program (Phase II) Performance Data

Background: This item was included on the Sector's agenda to provide information to the sector on the OCP meter performance data with calibrations updated for the 2005 grain season. Cathy Brenner of GIPSA, the NTEP Participating Laboratory for Grain Analyzers, presented data showing the performance of NTEP meters compared to the air oven. These data are based on the last three crop years (2002 - 2004) using calibrations updated for use during the 2005 harvest season. The Official Meter is the only meter specifically identified. The numerical identifiers were assigned randomly to the remaining meters except for sunflowers where, because only three devices are approved, the remaining meters are identified by the letters A and B. Meter 1 is the same instrument for all grains, etc. The moisture range covered by these graphs is the same moisture range listed on USDA GIPSA/FGIS in Directive 9180.61. As an example of the data presented, the graph for corn is shown below. The number in parentheses following the meter identification in the box beneath the graph indicates the average bias for that meter across the full moisture range represented by the graph. A PDF file with graphs of all NTEP grains is available from Co-Technical Advisor, Jack Barber. Send requests to jbarber@motion.net.



7. Effective Dates for NTEP and GIPSA Calibration Changes

Background: Grain Industry representatives have repeatedly stressed the importance of keeping NTEP calibration changes synchronized with GIPSA calibration changes. In the past, calibration changes for the Official Moisture Meter were made on a staggered schedule typically between May 1 and August 1, with dates chosen to coincide with the time at which stocks would be at their lowest level to minimize economic impact. Several years ago GIPSA reduced the number of dates for changing calibrations to two: May 1 for the NTEP grains wheat, barley, sorghum, rice, and oats; and August 1 for NTEP grains corn, soybeans, and sunflowers. These dates represent a compromise between making calibrations available prior to harvest and to ensure that grain stocks will be at their lowest levels. The present timeline for NTEP Phase II activities lists July 1 as the latest date for re-issuing annual Certificates of Conformance (CC's). However, because a July 1 date would miss the wheat harvest in many states, the CC for the Official Moisture Meter is now re-issued no later than May 1 for all NTEP grain calibrations. The CC notes the effective dates for the calibrations to indicate when they will be put into use in the Official System.

When this issue was discussed at the Sector's March 1998 meeting, one W&M representative wondered how to handle meter inspections performed in July, asking which calibration should be used, the one effective August 1 or the existing one. Opinions were divided on the best way to handle this situation. In one state, old calibrations may be used until the effective date of the new calibration, after which the device is re-inspected to verify that the new calibration has been installed. Others felt that this method of enforcement was not realistic, because it could result in requiring two or more trips per year to the majority of meters in their jurisdictions. They favored having the user install the new calibration at time of inspection. A manufacturing representative pointed out that the only purpose of specifying "effective dates" on a CC was to match the dates on which the new calibrations would be used in the official system. He suggested that W&M inspectors tell the user that the new calibration must be installed on the effective date if they want their meter to be in closer agreement with the official meter. It was recognized that the use of effective dates wasn't a new concept. Prior to the NTEP program, manufacturers had revised calibrations at various dates, sometimes without much warning, and often after a significant number of meters had already been inspected for the current season. States with inspection programs had already figured out how to deal with this situation. At that time, the Sector decided that the details of enforcement should be left to each state to decide based on their individual needs.

The issue of CCs showing only the current calibration details for calibrations with delayed (August 1) effective dates (when used on Official Meters) has come up again, this time in the case of cross-utilized meters. Under GIPSA's cross-utilization program, elevator or official agency-owned instruments can be "cross-utilized" between official inspection and commercial applications. Problems have arisen when such meters fail State inspections but fully comply with GIPSA directives and requirements. In April, an Illinois weights and measures inspector checked, and rejected, an official agency meter. The inspector correctly used the most recent CC that had been re-issued in February to reflect the addition of test weight per bushel testing features. Although the moisture measurement calibration constants remained the same as on the previous version of the CC, constants relating to Test Weight had been revised. The official agency meter contained the constants from the previous certificate, matching the constants of the then current GIPSA Program Directive. Although this situation was unique arising from the addition of NTEP approval for test weight and a February CC revision, there is still a problem when there is a difference between the issue date of a CC and the implementation dates for calibration changes shown on the CC. For example, this year the new CC (issued prior to May 1, 2005) for the Official Meter listed constants for soybeans that weren't scheduled for implementation until August. The soybean calibration constants shown on the 2005 CC didn't agree with those shown on GIPSA Program Directive 9180.61 (dated May 1, 2005) until GIPSA reissued the Program Directive with the new soybean constants on August 1, 2005.

Recommendation: The CC for the Official Meter is issued on May 1, but GIPSA introduces changes (if required) in the official system on two different dates: May 1 (for all grains except corn, soybeans, and sorghum) and August 1 for corn, soybeans, and sorghum. Unnecessary rejections of cross-utilized meters could be avoided if State inspectors retained a copy of the previous CC that lists the calibration constants for corn, soybean, and sorghum approved for use prior to August 1. To eliminate the burden of having to retain copies of old certificates and the possibility of using an old certificate by mistake, the NTEP Laboratory proposed an addition to the Certificate showing the constants from the previous, superceded Certificate for any grains with an implementation date later than May 1 (corn, soybean, and sorghum). Rich Pierce, GIPSA, commented that the FGIS Technical Services Division had proposed that all changes to the official system affecting NTEP grains be complete by May 1, so that calibration changes for any NTEP grain on the Official Meter are issued at the same time the CC is issued for the Official Meter.

Conclusion: The Sector rejected the proposal. Weights and Measures representatives were of the opinion that this was not a big issue in practice, and that it may be a training issue.

8. "All-Class" Moisture Calibrations

Background: The Grain Moisture Meter type evaluation program is currently structured to deal with individual class calibrations for moisture. The NIR Grain Analyzer program allows for either individual class calibrations or "all-class" calibrations for constituents other than moisture. One currently certified grain moisture meter uses an "all-class" Barley calibration that is listed separately on the certificate under Two-Row Barley and Six-Row Barley with different approved and pending moisture ranges for each of those classes. Two other instruments currently certified for grain moisture list the barleys, rough rices, and wheats separately on the certificate and have the meters set up with individual class calibrations. These two meters have a single equation and bias term for all classes of barley; another equation and bias term for all classes of rough rice; and a third equation for all classes of wheat with separate bias terms for all soft classes, all hard classes, and durum.

A grain moisture meter currently being evaluated has a single wheat (excluding durum), which may be called an "all type" calibration because the calibration covers something other than all the grains in a class, single rice, and single barley calibration with a common equation and separate bias terms for each grouping. Another instrument being evaluated uses a single calibration and bias term for wheat (excluding durum).

Recommendation: Cathy Brenner, GIPSA (the NTEP Participating Laboratory for Grain Analyzers), asked the Sector to consider the following questions regarding the evaluation of Grain Analyzers using "all-class" or combined-grain moisture equations:

- How should such devices be evaluated?
- What should be placed on the Certificate for approved and pending moisture ranges?

For type evaluation purposes, she suggested treating "all-class" moisture calibrations in a manner similar to the way "all-class" calibrations for other constituents are handled on NIR Grain Analyzers. "All-class" moisture calibrations would have to meet the accuracy, precision, and reproducibility requirements for the test sets of each included class in addition to meeting the "all-class" accuracy requirement when the data from all the included classes is pooled. For example in the case of an "all-class" wheat moisture calibration covering 5 classes of wheat, the basic 6 % moisture range for evaluating a Hard White Wheat calibration is 8 % to 14 % moisture content while the basic 6 % range for evaluating calibrations for the other classes of wheat is 10 % to 16 %. Thus, an "all-class" wheat calibration would be tested over an 8 % moisture range of 8 % to 16 % rather than the standard 6 % range.

The "approved" moisture range for an "all-class" moisture calibration would cover the range from the absolute lower to the absolute upper 2 % moisture interval for which the meter meets individual class tolerances. If an individual class does not have samples available in a given 2 % moisture interval to meet the approved tolerances, the meter must meet the pending tolerances in order for that moisture interval to be listed as "approved" on the certificate.

The "pending" moisture range for an "all-class" moisture calibration would cover the ranges from the absolute lower to the absolute upper 2 % moisture interval for which the meter meets the individual class tolerances. If an individual class does not meet either the approved or pending tolerances in a given 2 % moisture interval, then the next lower or upper moisture interval for which the meter meets either the "approved" or "pending" tolerances for each individual class is listed as the "pending" moisture range on the certificate.

Rich Pierce, GIPSA, reminded the Sector that Phase I testing was originally intended to evaluate basic meter capability – to check permanence, accuracy, repeatability and reproducibility. Soybeans, hard red winter wheat (HRWW), and corn were chosen as representative test media to demonstrate basic meter capability. These three grains could still be used to evaluate devices having an "all-class" or "all-wheat" calibration. NCWM Publication 14 stipulates that grains other than corn, soybeans, and hard red winter wheat will be checked for calibration bias before they can be listed on the Certificate of Conformance (CC). This implies that grains in an "all-class" or "all-wheat" calibration would be individually checked for bias against air oven prior to being listed on an original CC.

Discussion: The issue of "pending" and "approved" ranges for "all-class" or "all-type" calibrations led to a lengthy discussion. The Sector struggled with how to handle cases where Phase II data resulted in different approved or pending ranges on the individual grain types included in an "all-class" or "all-type" calibration. What range should appear on the CC? Again, the general opinion was that ranges should not be reduced due to lack of data. If one class of wheat had insufficient samples in a 2 % interval to support a "pending" rating for that interval while another wheat class had samples supporting a "pending" rating for the same 2 % interval, it seemed logical to allow the interval to have a "pending" rating in the "all-class" or "all-type" calibration. One member reasoned that the 2 % interval with insufficient Phase II samples to support a "pending" rating was also unlikely to see many market samples in that moisture interval.

In a related issue, Rich Pierce mentioned that the NTEP Laboratory is having problems increasing and decreasing ranges of the meter depending on the data available in the most recent three-year period. Most Sector members agreed that it didn't seem reasonable to reduce a range solely because data previously used to justify the range classification had to be dropped from the most recent 3-year period.

Conclusion: A final decision on this issue was postponed until specific wording for Publication 14 could be developed to address the handling of cases where Phase II data resulted in different approved or pending ranges on the individual grain types included in an "all-class" or "all-type" calibration. The Sector agreed that existing Phase I test methodology was adequate for "all-class" and "all-type" calibrations. Phase I testing will be performed only with corn, soybeans, and hard red winter wheat (HRWW). If an "all wheat" (except durum) calibration is submitted, HRWW will be used for the Phase I tests. Until one or more years of Phase II data are available, grains other than corn, soybeans, and HRWW will be checked for calibration bias before they are listed on the Certificate of Conformance (CC).

Diane Lee, NIST, Co-Technical Advisor to the Sector, agreed to send manufacturers a request for additional suggestions/comments on this issue. Comments are due by the end of October. Co-Technical Advisor, Jack Barber, will consider these comments in developing wording for changes to NCWM Publication 14. A letter ballot on the final wording is to be circulated in time to be considered by the NTEP Committee at the NCWM Interim Meeting in January 2006.

9. Editorial Correction to GMM Chapter of Publication 14 – Table in Appendix D

Background: At its August 2003 meeting the GMM Sector recommended changing the Hard White Wheat moisture range from “10 % to 16 %” to “8 % to 14 %” in the table **Moisture Ranges and Tolerances for Sample Temperature Sensitivity** in Appendix D of the 2003 Edition of the GMM Chapter of Publication 14. The Sector also noted that missing quotation marks needed to be added in the table’s heading and that Medium Grain Rough Rice with a moisture range of 10 % to 16 % and tolerance limit of 0.45 (as approved at the Sector's September 1997 meeting) needed to be added to the table; this entry to the table was inadvertently omitted from the 2001 and 2002 editions of Publication 14.

The 2004 Edition of the GMM Chapter of Publication 14 incorporated the following changes to the Table in Appendix D:

- The missing quotation marks were added to the table heading in Appendix D
- The Hard White Wheat moisture range in the table was changed to "8 % to 14 %".
- Medium Grain Rough Rice with a moisture range of 10 % to 16 % and tolerance limit of 0.45 was added to the table.

However, the row for Long Grain Rough Rice was mistakenly deleted from the table. This error was addressed at the Sector's August 2004 meeting and the Sector was advised that because this was an editorial error, it could be corrected without making the issue a formal Agenda Item. Unfortunately, the error was not corrected in the 2005 Edition of the GMM Chapter of Publication 14.

Recommendation: Correct the **Moisture Ranges and Tolerances for Sample Temperature Sensitivity** Table on page 43 of Appendix D of the 2005 Edition of the GMM Chapter of Publication 14 by inserting a row for Grain Type Long Grain Rough Rice (with Moisture Range 10 % to 16 % and Tolerance Limit 0.45) between the rows for Oats and Medium Grain Rough Rice.

Conclusion: The Sector agreed unanimously to the proposed correction as shown in the following table.

Moisture Ranges and Tolerance for Sample Temperature Sensitivity (for the "Other 12" NTEP Grains)		
Grain Type	**Moisture Range for Test**	**Tolerance Limit (Bias at Temperature Extremes)**
Durum Wheat	10 % to 16 %	0.35
Soft White Wheat	10 % to 16 %	0.35
Hard Red Spring Wheat	10 % to 16 %	0.35
Soft Red Winter Wheat	10 % to 16 %	0.35
Hard White Wheat	8 % to 14 %	0.35
Sunflower seed (Oil)	6 % to 12 %	0.45
Grain Sorghum	10 % to 16 %	0.45
Two-rowed Barley	10 % to 16 %	0.35
Six-rowed Barley	10 % to 16 %	0.45
Oats	10 % to 16 %	0.45
Long Grain Rough Rice	10 % to 16 %	0.45
Medium Grain Rough Rice	10 % to 16 %	0.45

10. Evaluating GMM Moisture Accuracy as a Continuous Function across the Entire Moisture Range

Source: Charles R. Hurburgh, Jr., Iowa State University

Background/Discussion: Section III of the Grain Moisture Meter (GMM) Chapter of *NCWM Publication 14* calls for testing device accuracy over a 6 % moisture range using 10 samples selected from each 2 % moisture interval. The two tests for accuracy are bias (meter versus oven) and the Standard Deviation of the Differences (SDD) between the meter and the air oven for each of the 2 % moisture intervals. The bias of all samples in each 2 % moisture interval of the full moisture range is also the basis for evaluating GMM calibration performance annually using data collected as part of the on-going national calibration program.

The evaluation of accuracy (for moisture) in two percentage point intervals, with an independent evaluation in each interval, assumes that the performance of a device is not continuous and can be adjusted in each of the increments independently of the others. This is not a true assumption, and so the individual increment evaluations, particularly in cases where fewer than 20 samples (not enough to encompass the full 95 % confidence interval [CI] that the tolerances are based upon) become partially dependent on the properties of the samples in the increments. Naturally all samples cannot be tested in all increments, so there is automatically a nested design. Instrument performance is a continuous function. As an alternative to the present evaluation method, data interpretation (not the design of the lab work) could require that the overall bias (across all samples) not be statistically significant ($p = 0.05$) and that there be no significant slope (Δ error / Δ oven moisture) across the range of data. The variability test (sd of differences) could remain the same as it is now. The NIR program is essentially this way now, because there are no ranges for the constituents. A second alternative for consideration is to use a moving average (across ranges) to test bias and standard deviation.

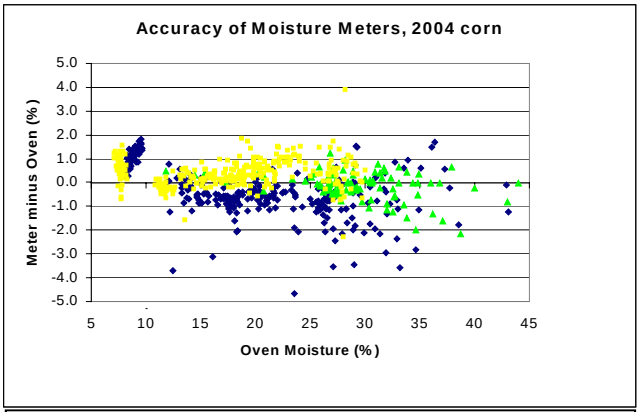


Figure 10.1 – Typical Error Patterns, 2004 Corn

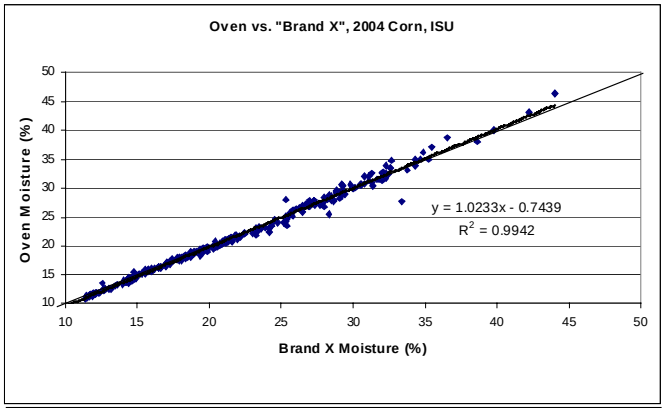


Figure 10.2 – Oven vs. Meter, Brand X

Figure 10.1 shows typical moisture error patterns (meter minus air oven) for three device types based on 2004 corn crop data. Figure 10.2 illustrates the continuous nature of meter performance when measured over the full range of operation.

Dr. Hurburgh commented that the study of error functions was mostly applicable to Phase II evaluations, but because of the small number of samples involved in Phase I testing, the study might provide suggested improvements for interpreting Phase I data.

Recommendation: The Sector was asked to review this issue and consider making it a work project for the coming year with formation of an *ad hoc* study group composed of interested Sector members and non-member statistician(s).

Conclusion: Dr. Hurburgh volunteered to chair an *ad hoc* study group to review the issues outlined in Agenda Items 10 and 11. He will send a questionnaire to Sector members and interested parties to determine who is interested in joining the group.

11. Prescreening Grain Samples for GMM Type Evaluation

Source: Charles R. Hurburgh, Jr., Iowa State University

Background: Grain samples used in the accuracy, precision, and reproducibility tests of Section III. **Accuracy, Precision, and Reproducibility Requirements** in the Grain Moisture Meter (GMM) Chapter of *NCWM Publication 14* are selected according to the following procedure:

> The sample set will be screened using the FGIS official meter model and the air oven. Samples where the official meter model disagrees from the air oven by more than the Handbook 44 acceptance tolerance will be deleted and another sample selected to replace it. No sample set will be used where the standard deviation of the differences between the FGIS official meter model and the air oven for the 10 samples in a moisture interval exceed one-half the Handbook 44 acceptance tolerance minus 0.1, (i.e., in the 12 % to 14 % interval for corn, the standard deviation of the differences should not exceed (0.4 to 0.1) = 0.3). Finally, any sample that is not within three standard deviations of the mean for the test meter (for either the 2 % or 6 % moisture interval) will be dropped before analysis of the data.

Discussion: The prescreening of samples to eliminate poor predictors is an attempt to remove outliers in advance, so that the test lab does not have to make judgments about outliers. The problem is that samples prescreened on one device will likely have larger rather than smaller variability in the device under test. Error patterns of devices, even when accurately calibrated on average to the reference, will not be the same on individual samples and often will be in opposite directions. The effect is to increase the chances of outliers on the tested device and effectively lessen the chances of the second device passing. Multivariate NIR units are especially prone to this problem. In test categories that

have few samples (10 or less) with low tolerances, the impact is quite large and drives calibrations to model the NTEP data rather than the universe of samples.

The following figures illustrate this problem. Figure 11.1 shows air oven moisture vs. meter moisture for two different device types based on data from the 2003 corn crop covering typical market-range moistures. Figure 11.2 shows the error patterns for the two devices, and Figure 11.3 shows that there is no relationship between the two devices on an individual sample error basis.

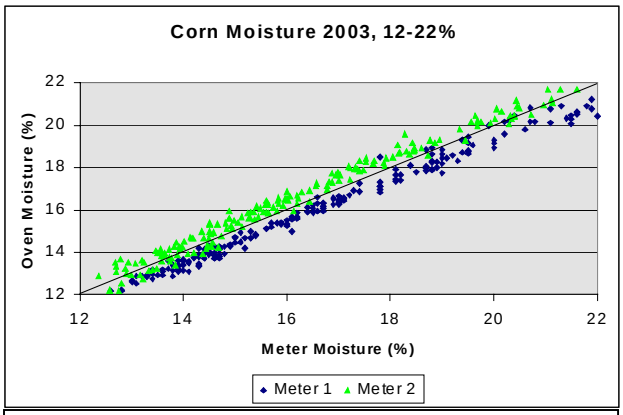


Figure 11.1 - Corn Moisture 2003 – Two Meters

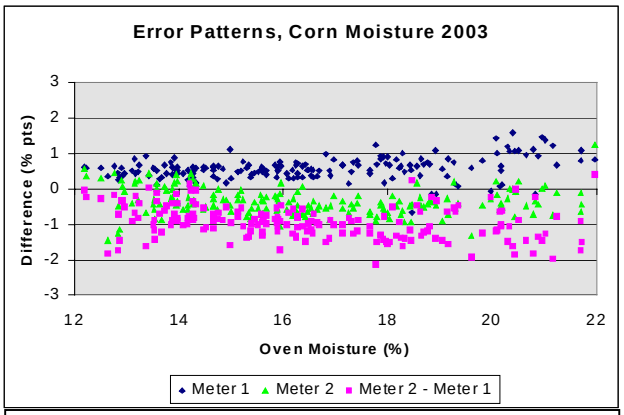


Figure 11.2 – Error Patterns

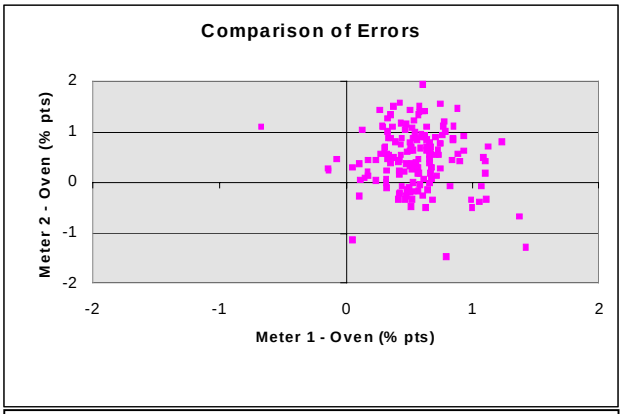


Figure 11.3 – Error Comparison

To overcome this effect, the following options might be considered, recognizing that there has to be a tradeoff between "fairness" and lab procedure complexity:

- Choose the test samples randomly and use statistical outlier tests that incorporate the variability of the reference method data as well as the device data.
- Choose the special set samples (temperature stability) after the accuracy test so these samples can be reasonable predictors on the device being tested. The purpose of temperature samples is to test response to temperature only.
- Choose field inspection samples based on all approved devices.

Dr. Hurburgh remarked that this is an emerging problem that will become more acute as more instruments of different technologies are introduced into the system.

Rich Pierce, GIPSA, reported that the present method of prescreening samples has worked well with test set results agreeing well over time. He said that virtually no samples can be found that will fit all instruments. He has concerns

that the topics of Agenda Items 10 and 11 are too general and wonders what impact they might have on NTEP evaluation procedures.

Recommendation: The Sector is asked to review this issue and consider making it a study item for the coming year with formation of an *ad hoc* study group composed of interested Sector members. Because this issue has a major effect on type evaluation, especially when alternative technologies are involved, manufacturers are urged to seriously consider becoming an active participant in this *ad hoc* group should the Sector decide to form one.

Conclusion: Dr. Hurburgh volunteered to chair an *ad hoc* study group to review the issues outlined in Agenda Items 10 and 11. He will send a questionnaire to Sector members and interested parties to determine who is interested in joining the group.

12. Proposed Change to Publication 14 - Assigning Sample Data to Moisture Ranges for GMM Type Evaluation

Source: Charles R. Hurburgh, Jr., Iowa State University

Background: Many of the tests specified in the Grain Moisture Meter chapter of NIST Publication 14 require using a defined number of samples in each of three 2 % moisture intervals. For ease of selection, the samples are tested on the Official meter and are assigned to the 2 % moisture intervals based on the Official meter's moisture result. It is simpler to assign ranges in advance based on prescreening because the sample set is defined before the test; however, assignment of sample data to moisture ranges can be a critical item for device evaluation, in that one sample shifted from one range to another can actually affect the pass/fail status of the device in both ranges, depending on the performance of the device on the other samples in the two ranges. Assigning the samples to 2 % moisture intervals based on air oven moisture results (or, in the case of sample temperature sensitivity tests, based on moisture determined at room temperature by the device under test) will reduce sample set dependence and lessen the impact of individual sample properties resulting in a more realistic test of device characteristics. Assigning samples to 2 % moisture intervals based on their air oven moisture values also matches the basis on which sample data are grouped for analysis in the Phase II On-going Calibration Program.

Recommendation: Dr. Hurburgh proposed an amendment to the Grain Moisture Meter chapter of NIST Publication 14 to specify that test sample sets are to be selected based on air oven moisture values or, in the case of sample temperature sensitivity tests, based on moisture determined at room temperature by the device under test.

Discussion: A question was raised regarding what basis would be used to decide which samples to discard in the event that all extra samples were not needed. Dr. Hurburgh suggested that one possibility was to use only the first 10 samples that fell within the range.

Rich Pierce, GIPSA, was not in favor of changing the existing laboratory procedure. He explained that deliberately selecting samples that are distributed across each 2 % range provides for a better test set. The NTEP Laboratory was not eager to change a procedure that has worked well for years. Dr. Pierce did not see a problem with what is being done procedurally at the present time.

Conclusion: The Sector failed to reach a consensus on the proposed change.

13. Report on OIML TC 17/SC 1 IR59 “Moisture Meters for Cereal Grains and Oilseeds”

Background: This item was included on the Sector’s agenda to provide a summary of the activities of OIML TC 17/SC 1. Since June 22, 2001, a TC 17/SC 1 work group has been meeting to review revision to OIML R 59. The most recent meeting of the TC 17/SC 1 work group was held on September 20 - 21, 2004, at the Laboratory National D’Essais (LNE) in Paris, France.

Discussion: The most recent draft of OIML R 59 is the 3rd Committee Draft of OIML R59 "Moisture Meters for Cereal Grain” dated April 2005. This has been submitted by the Secretariat to participating and observing countries for review, comment and approval of the changes. Copies of the 3rd Committee Draft of OIML R59 and the minutes of the

TC 17/SC 1 September 2004 meeting can be found on the NIST Weights and Measures Division website at: http://ts.nist.gov/ts/htdocs/230/235/R59draft.htm.

Diane Lee, NIST Weights and Measures Division, reviewed some of the changes included in the draft and asked Sector members to forward comments to her by September 8, 2005. She reported that concerns relating to the temperature requirements were addressed by inserting the following sentence into Paragraph 5.7.1.:

> If the moisture meter is not able to measure sample temperature, then the operating temperature range shall be defined by national responsible bodies.

And Paragraph 5.7.2. was modified by inserting the sentences:

> The moisture meter shall be able to take into account a temperature difference of at least 10 °C. If the moisture meter is not able to measure sample temperature, the maximum allowable temperature difference between the meter and the sample shall be defined by national responsible bodies.

To address the concerns relating to sample size requirements, Paragraph 6.1.5. was modified to remove the explicit minimum sample size requirements, leaving only the sentence:

> "Meters shall be designed to measure the moisture content of representative size grain samples."

A Test Section Check List has been added to the draft. It is not a detailed "check list" like the one in Publication 14.

Ms. Lee also reported that China (the Secretariat of TC 17/SC 1) has indicated that a meeting of TC 17/SC 1 would not be held in 2005. A date for a future meeting has not yet been set.

Steve Patoray, NTEP Director, answered Sector concerns that changes in the 3rd Committee Draft might ultimately allow approval of grain moisture meters that didn't meet current Handbook 44 requirements. Mr. Patoray stated that these differences could be dealt with when (and if) the United States enters into a mutual acceptance agreement (MAA) with OIML, the EU or other body.

14. Report on OIML TC 5/SC 2 Document D-SW, "General Requirements for Software Controlled Measuring Devices"

Background: This item was included on the Sector's agenda to provide a summary of the activities of OIML TC 5/SC 2. In December 2004 the Secretariats, Germany and France, for OIML TC 5/SC 2 submitted a pre-draft of the OIML Document "General Requirements for Software-Controlled Measuring Instruments." The Document is intended as guidance for technical committees when addressing software requirements in future OIML Recommendations for software-controlled measuring instruments.

According to the Secretariat, the pre-draft was developed based on responses of OIML TC 5/SC 2 members to a questionnaire, the analysis of existing OIML Recommendations and Documents, the analysis of existing regional software requirements (including the European Measurement Instrument Directive and U.S. Food and Drug Guidance Documents), and ISO/IEC software standards.

Noting that Sections 7, 8 and 9 of the pre-draft document were incomplete, Wayne Stiefel, NIST, Weights and Measures Division, solicited comments on the pre-draft. United States interested parties were asked to review the document in terms of the general approach being proposed and what is practical and applicable in a type approval setting and to also provide detailed comments on specific sections. NIST was particularly interested in comments related to the general and specific requirements for measuring instruments in Section 5, and the type approval examination and evaluation procedures in Section 6. Comments were to be returned to Mr. Stiefel by February 1, 2005, to allow NIST to prepare a collated set of comments by February 28, 2005, for the Secretariat.

The pre-draft document prescribes in Section 5 general requirements for measuring instruments, including:

1. Information display;
2. Means of fraud protection;
3. Hardware features supporting fault detection and durability protection; and
4. Specific requirements for:
   a. Design of interfaces;
   b. Separation of software models performing functions subject to legal control from other functions;
   c. Display or printouts;
   d. Storage of data and transmission via communication systems;
   e. Compatibility of operating systems and hardware portability;
   f. Conformity of production-line devices and software with approved type;
   g. Verification of software updates; and
   h. Procedures for loading updated software and maintaining audit trail.

In addition, the document provides in Section 6 type approval procedures to be used in examination and evaluation of the software including the following items:

1. Software documentation to be supplied;
2. A set of validation methods for software examination, which a Recommendation may use to specify the details of the procedure to assure that the instrument complies with the Recommendation. Software specific validation methods include: examination of the software documentation and specification and validation of design; functional testing of metrological features; functional testing of software features; data flow analysis; code inspection walk-through; and software module testing.

The pre-draft software document, the Secretariat's Response to TC 5/SC 2 Member Comments, and electronic forms for submitting comments are still available on the web at: http://ts.nist.gov/ts/htdocs/230/235/TC5-SC2.htm.

Discussion: Diane Lee, NIST/WMD, reported that a first working draft Recommendation is being prepared by the Secretariats to address comments received on the outline draft. Another meeting of TC 5/SC 2 has tentatively been scheduled for the end of 2005. Commenting on the possible impact of the proposed Recommendation, one manufacturer stated that his company would be opposed to the recommendation if it meant that calibration parameters would need to be made available. Sector members are asked to review this document, especially in terms of its possible impact on OIML R59 "Moisture Meters for Cereal Grain" and with emphasis on what is practical and applicable in a type approval setting.

15. Report on OIML TC 17/SC 8 Protein Draft Recommendation

Background: This item was included on the Sector's agenda to provide a summary of the activities of OIML TC 17/SC 8. Australia, secretariat of TC 17/SC 8, developed an outline of the Recommendation on Protein Measuring Instruments for Cereal Grain (March 2004) that was circulated to participating nations (Australia, Brazil, Canada, Czech Republic, Germany, Japan, Poland, Republic of Korea, Russia, and the United States) for comments. In the United States the document was circulated to the U.S. National Work Group (USNWG) for comments. OIML TC 17/SC 8, charged with developing an International Recommendation (IR) for Protein Measuring Instruments for Cereal Grain, held its first meeting May 31 – June 1, 2004, in Sydney, Australia. Representatives from Australia, Japan, New Zealand, and the United States attended the meeting. Comments received from the United States and Germany were discussed at the TC 17/SC 8 meeting in Australia. The comments for the most part were accepted. The scope was expanded to include wheat, barley, corn, soybeans, and rice, and changes were made to allow the national measurement authority to determine moisture basis, reference method, instrument monitoring process, and whether or not to test non-indirect measuring devices.

A revised outline of the Recommendation on Protein Measuring Instruments for Cereal Grain, incorporating the changes agreed upon at the 2004 meeting in Sydney, was distributed with the agenda for the Near-Infrared Grain Analyzer Sector's August 2004 meeting for further review and comment. The U.S. work group members provided limited comments to this draft. The comments that were provided to the Secretariat related to parts of the document that appeared to be in conflict with U.S. metrological practice and procedures.

Discussion: A meeting of TC 17/SC 8 was hosted by PTB in Berlin, Germany, June 27 - 28, 2005, to review the May 2005 version of the "Outline of the Recommendation on Protein Measuring Instruments." Diane Lee, NIST/WMD, reported that the first working draft may be available by end of September 2005. Diane will distribute the draft to the sector members along with a request for comments when the first working draft is available. Diane also requested that the Sector review the tolerances in the current draft and provide comments as soon as possible.

16. Naming Conventions for Near-Infrared Analyzer Calibrations

Background: Both the Grain Moisture Meters Code and the Near-Infrared Grain Analyzer Code of NIST Handbook 44 specify that a device must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number. The relevant paragraphs are shown below:

Sec. 5.56.(a) Grain Moisture Meters

S.2.4.1. Calibration Version. - A meter must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number for use in verifying that the latest version of the calibration is being used to make moisture content and test weight per bushel determinations.
(Added 1993) (Amended 1995 and 2003)

Sec. 5.57. Near-Infrared Grain Analyzers

S.2.5.2. Calibration Version. *- An instrument must be capable of displaying either calibration constants, a unique calibration name, or a unique calibration version number for use in verifying that the latest version of the calibration is being used to make constituent determinations, and that the appropriate instrument settings have been made for the calibration being used.*
[Nonretroactive as of January 1, 2003]
(Amended 2001)

Because the constituent calibrations used on near-infrared (NIR) instruments typically consist of many multi-digit constants, manufacturers of these devices normally elect to identify the calibration version by means of "a unique calibration version number."

Some devices currently use a combination of terms to identify the calibration. For example, the Foss Infratec 1241 uses two levels of calibration identification. At the most basic level, a prediction model (PM) identifier is used for each individual constituent calibration. The PM contains the coefficients used to actually determine constituent content. Prediction models for various constituent calibrations are combined to form application models (AM). AM identifiers appear on the analyzer screen and are also the calibration identifiers used in the audit trail. The AM identifiers may be different for each instrument based on the customer's requirements (e.g., the AM may include constituents not covered by NTEP, such as wheat gluten, or possibly an alternate moisture basis.) The PM identifiers, which may be displayed by moving deeper into the menu system, are the same for all instruments.

Two other Foss instruments, Infratec 1227 and Infratec 1229, also make use of AM identifiers which may be different for each instrument depending on the specific combination of prediction models they contain. However, the PM identifiers cannot be displayed on these two instruments.

Discussion/Recommendation: GIPSA implemented the NTEP wheat protein calibration in May and the NTEP barley calibration in July. Foss Infratecs are being used in both the official system and the commercial system. Anticipating that the uniqueness of AM identifiers based on user requirements could lead to field inspection problems on cross-utilized instruments, GIPSA met with Foss last December to discuss how "unique calibration version numbers" might be listed to meet the needs of both the NTEP program and GIPSA, with the objective being to make it obvious that the current NTEP protein and moisture calibrations are being used. The proposed solution would first appear on Foss Certificates of Conformance: 95-063A9 and 01-063A5.

The solution proposed by GIPSA is to list the calibrations using the following code:

ABYYMMxx

where AB is the grain identifier
YY is the year the calibration is issued
MM is the month the calibration is issued
xx would be a "version" number from 00 to 99

The ABYYMM part of the calibration would be the unique identifier to ensure that the current calibrations listed on the Certificate of Conformance (CC) for moisture, oil, and protein are being used. The xx would then be customer specific and it could include constituents not covered by NTEP such as wheat gluten or possibly an alternate moisture basis.

For example, the calibration for durum wheat protein and moisture would be listed as WU050101. The unique identifier of the calibration would be WU0501 to let the field inspector quickly see on any Infratec 1227, 1229, or 1241 that it has the current NTEP moisture and protein calibrations. The 01 would be a version number that is assigned from 00 to 99 that is customer specific and it includes constituents not covered by the NTEP such as wheat gluten or possibly an alternate moisture basis.

The ABYYMMxx is the designation the user and field inspector would see when they walk up to the instrument. The field inspector could go into the instrument menu structure to see the specific moisture equation name, protein equation name, etc., that are bundled together to make up the ABYYMMxx calibration version on the Infratec 1241 with the xx suffix unique to each instrument.

The Sector was asked to consider if there would be any pitfalls or problems with using the above GIPSA proposal to list the calibrations on the CC by the AM number, using this scheme, e.g. WU0501xx, with the note that xx can be any number between 00 and 99.

One Sector member pointed out that the PM calibrations making up the bundle had been approved, not the AM bundle itself. Several members favored using the proposed naming convention, listing only PM identifiers on the CC for the Infratec 1241 and listing both the AM identifier and, if possible, the included PM identifiers on the CC for the Infratec 1227 and 1229. The Foss representative noted that the Infratec 1227 and 1229 were NTEP approved only for moisture and had not been available for sale for a number of years. It was also pointed out that the AM contains metrologically significant instrument set-up data (the number of replicates for example), so it must appear on the CC in addition to the PM's.

Conclusion: The CC for the Infratec 1241 will list both AM identifiers and the identifiers of all NTEP-approved PM's included in each AM. The CC for the Infratec 1227 and 1229 will list only the AM identifier (in this case called "Calibration Version"). For all of these models, the AM identifier will appear in the form proposed above with only the last two digits, shown as “xx,” varying. Examples of the listings for Hard Red Spring Wheat and Corn as they appear on the CC's are shown below.

From CC 01-063A5 (Infratec 1241)	**From CC 95-063A9 (Infratec 1227 & 1229)**
Hard Red Spring Wheat Designation: HRS WHEAT Application Model: WS0501xx Moisture Prediction Model: WBMO0024 Moisture Range - Approved: 8 % to 20 % Moisture Range - Pending: 6 % to 24 % Protein Prediction Model: WBPR0028 Native Moisture Basis: 0 % Subsamples: 7 (or more) Slope: 1.0 for all instruments Intercept (Bias): Varies by instrument	**Hard Red Spring Wheat** Designation: HRS WHEAT Calibration Version: WS0501xx Moisture Range - Approved: 8 % to 20 % Moisture Range - Pending: 6 % to 24 % Subsamples: 10 Path Length: 18 mm Slope: 1.0 for all instruments Intercept (Bias): Varies by instrument

From CC 01-063A5 (Infratec 1241)	From CC 95-063A9 (Infratec 1227 & 1229)
Corn Designation: CORN Application Model: CO0501xx Moisture Prediction Model: COMO0011 Moisture Range - Approved: 8 % to 40 % Moisture Range - Pending: 8 % to 46 % Oil Prediction Model: COOI0006 Protein Prediction Model: COPR0007 Native Moisture Basis: 0 % Subsamples: 7 (or more) Slope: 1.0 for all instruments Intercept (Bias): Varies by instrument	**Corn** Designation: CORN Calibration Version: CO0501xx Moisture Range - Approved: 8 % to 44 % Moisture Range - Pending: 8 % to 46 % Subsamples: 10 Path Length: 30 mm Slope: 1.0 for all instruments Intercept (Bias): Varies by instrument

17. Time and Place for Next Meeting

The next meeting is tentatively planned for Wednesday, August 23, and Thursday, August 24, in the Kansas City, Missouri, area. Sector members are asked to hold both these days open pending determination of exact meeting times and meeting duration. Meetings will be held in one of the meeting rooms at the National Weather Service Training Center if available. Final meeting details will be announced by late April 2006.

If you would like to submit an agenda item for the 2006 meeting, please contact Steve Patoray, NTEP Technical Director, at spatoray@mgmtsol.com, G. Diane Lee, NIST Technical Advisor, at diane.lee@nist.gov, or Jack Barber, Technical Advisor, at jbarber@motion.net by April 1, 2006.

Change Summary

Recommended Amendments and Changes to the Grain Moisture Meters Chapter in the 2005 Edition of Publication 14			
Section Number	**Amendment/Change**	**Page**	**Source**
Appendix D	Correct the Table titled: **Moisture Ranges and Tolerances for Sample Temperature Sensitivity** by inserting a row for Grain Type Long Grain Rough Rice (with Moisture Range 10 % to 16 % and Tolerance Limit 0.45) between the rows for Oats and Medium Grain Rough Rice (see corrected Table).	GMM-43	08/05 Grain Analyzer Sector Item 9